

WHAT IS CLAIMED IS:

1. An assembly for rotating a selected article in a stream of like articles without rotating an adjacent article, each of the articles moving along a conveying surface of a conveyor belt with a speed of forward travel and comprising an axis which is normal to the conveying surface, the assembly comprising:

a mechanism for revolving the selected article around the axis without changing the speed of forward travel of the axis;

wherein a distance travelled by the axis of the revolving selected article is greater than a distance between the axis of the revolving selected article and the axis of the non-revolving adjacent article.

2. The assembly as in Claim 1, wherein each of the articles comprises a substantially cylindrical portion coaxial with the article axis of rotation, and said revolving mechanism comprises:

first and second moving surfaces, said surfaces positioned opposite one another at a level of the article cylindrical portion, said surfaces running parallel to and travelling in the same direction as the conveying surface, each of said surfaces travelling at a speed different than the speed of forward travel such that the average of said first and second moving surface speeds is the speed of forward travel; and

a mechanism for increasing friction between said moving surfaces and said selected article cylindrical portion.

3. The assembly as in Claim 2, wherein said first and second moving surfaces are ordinarily separated by a gap equal to or greater than a diameter of the article cylindrical portion, and wherein said friction increasing mechanism comprises:

a sensor for determining the position of the axis of the selected

article between said first and second moving surfaces; and  
an actuating assembly for reducing said gap at a point opposite the  
selected article axis such that said gap is less than a diameter of  
the article cylindrical portion.

4. The assembly as in Claim 3, wherein said actuating assembly is comprised of a row of pressure pads and said first moving surface is provided by a first moving belt positioned between said row and the stream of articles, each of said pads moveable towards said belt, wherein when moved towards said belt, a given one of said pressure pads deflects said first moving surface towards said second moving surface, thereby reducing said gap.

5. The assembly as in Claim 4, wherein said first moving belt is manufactured from a magnetic material and each of said pressure pads is comprised of a magnet.

6. The assembly as in Claim 4, wherein said pressure pads are manufactured from UHMW polyethylene.

7. The assembly as in Claim 4, wherein said moving belts are manufactured from a material selected from the group consisting of rubber, urethane, neoprene, fibreglass and Kevlar® or combinations thereof.

8. The assembly as in Claim 4, wherein said actuating assembly further comprises a plurality of pistons, one of each of said pistons for moving each of said pressure pads.

9. The assembly as in Claim 4, wherein said pistons are pneumatic pistons.

10. The assembly as in Claim 4, further comprising a controller for

providing compressed air to said pistons.

11. The assembly as in Claim 1, wherein each of the articles comprises a substantially cylindrical portion coaxial with the article axis and said revolving mechanism comprises:

- first and second moving surfaces applying a rotational force to said cylindrical portion, said surfaces positioned opposite one another at a level of the article cylindrical portion, said surfaces running parallel to and travelling in the same direction as the conveying surface, each of said surfaces travelling at a speed different than the speed of forward travel such that the average of said first and second moving surface speeds is the speed of forward travel; and
- a mechanism for applying a pressure to the adjacent article in a direction substantially parallel to the article axis thereby preventing said adjacent article from being rotated by said rotational force.

12. The assembly as in Claim 11, wherein said pressure applying mechanism comprises:

- a moving surface positioned opposite the conveying surface and moving at a speed of the conveying surface, the articles travelling in an opening between said moving surface and the conveying surface;
- a sensor for determining the position of the adjacent article along the conveying surface; and
- an actuating assembly for reducing said opening at a point opposite the selected article such that said opening is less than a dimension of the adjacent article along the article axis.

13. The assembly as in Claim 12, wherein said actuating assembly comprises a row of pressure pads and said moving surface is provided by a

belt travelling between said row and the stream of articles, each of said pads moveable towards said moving surface, wherein when moved towards said moving surface, a given one of said pressure pads deflects said moving surface towards said conveying surface, thereby reducing said opening.

14. The assembly as in Claim 13, wherein said belt is manufactured from a magnetic material and each of said pressure pads is comprised of a magnet.

15. The assembly as in Claim 13, wherein said pressure pads are manufactured from UHMW polyethylene.

16. The assembly as in Claim 13, wherein said moving belt is manufactured from a material selected from the group consisting of rubber, urethane, neoprene, fibreglass and Kevlar® or combinations thereof.

17. The assembly as in Claim 13, wherein said actuating assembly further comprises a plurality of pistons, one of each of said pistons for moving each of said pressure pads.

18. The assembly as in Claim 13, wherein said pistons are pneumatic pistons.

19. The assembly as in Claim 13, further comprising a controller operationally attached to said sensor for selectively providing compressed air to said pistons.

20. An assembly for selectively rotating an article around an article axis, the article moving along a conveying surface of a conveyor belt with a speed of forward travel and comprising a substantially cylindrical portion coaxial with the article axis, the assembly comprising:

first and second moving surfaces, said surfaces positioned opposite one another at a level of the article cylindrical portion, said surfaces running parallel to and travelling in the same direction as the conveying surface, each of said surfaces travelling at a speed different than the speed of forward travel such that the average of said first and second moving surface speeds is the speed of forward travel; and

a mechanism for increasing friction between said moving surfaces and said selected article cylindrical portion.

21. The assembly as in Claim 20, wherein said first and second moving surfaces are ordinarily separated by a gap equal to or greater than a diameter of the article cylindrical portion, and wherein said friction increasing mechanism comprises:

a sensor for determining the position of the axis of the selected article between said first and second moving surfaces; and

an actuating assembly for reducing said gap at a point opposite the selected article axis such that said gap is less than a diameter of the article cylindrical portion.

22. The assembly as in Claim 21, wherein said actuating assembly is comprised of a row of pressure pads and said first moving surface is provided by a first moving belt positioned between said row and the stream of articles, each of said pads moveable towards said belt, wherein when moved towards said belt, a given one of said pressure pads deflects said first moving surface towards said second moving surface, thereby reducing said gap.

23. The assembly as in Claim 22, wherein said first moving belt is manufactured from a magnetic material and each of said pressure pads is comprised of a magnet.

24. The assembly as in Claim 22, wherein said pressure pads are manufactured from UHMW polyethylene.

25. The assembly as in Claim 22, wherein said moving belts are manufactured from a material selected from the group consisting of rubber, urethane, neoprene, fibreglass and Kevlar® or combinations thereof.

26. The assembly as in Claim 22, wherein said actuating assembly further comprises a plurality of pistons, one of each of said pistons for moving each of said pressure pads.

27. The assembly as in Claim 22, wherein said pistons are pneumatic pistons.

28. The assembly as in Claim 22, further comprising a controller for providing compressed air to said pistons.

29. The assembly as in Claim 20, further comprising a means for stabilising the article.

30. The assembly as in Claim 29, wherein said stabilising means comprises a series of holes in the conveying surface and a source of suction drawing air through said holes from the conveying surface.

31. The assembly as in Claim 30, wherein said source of suction comprises a source of compressed air and a venturi effect device.

32. The assembly as in Claim 29, wherein said stabilising means comprises a second pair of moving surfaces, said surfaces positioned opposite one another at a level of the article cylindrical portion, said surfaces running parallel to and travelling in the same direction as the conveying surface, each

of said surfaces travelling at substantially the same speed as the speed of forward.

33. The assembly as in Claim 32, wherein said second pair of moving surfaces are positioned above said first and second moving surfaces.

34. The assembly as in Claim 32, wherein said second pair of moving surfaces are positioned below said first and second moving surfaces.

35. The assembly as in Claim 21, wherein each of said second pair of moving surfaces is provided by a moving belt.

36. The assembly as in Claim 35, wherein said belt is manufactured from a material selected from the group consisting of rubber, urethane, neoprene, fibreglass and Kevlar® or combinations thereof.

37. An assembly for selectively applying pressure to a selected article in a stream of like articles, each of the articles moving along a conveying surface of a conveyor belt with a speed of forward travel and comprising an axis which is normal to the conveying surface, the assembly comprising:

- a moving surface positioned opposite the conveying surface and moving at a speed of the conveying surface, the articles travelling in an opening between said moving surface and the conveying surface;
- a sensor for determining the position of the selected article along the conveying surface; and
- an actuating assembly for reducing said opening at a point opposite the selected article such that said opening is less than a height of the selected article.

38. The assembly as in Claim 37, wherein said actuating assembly

comprises a row of pressure pads and said moving surface is provided by a moving belt travelling between said row and the stream of articles, each of said pads moveable in a direction towards said moving surface, wherein when moved towards said moving surface, a given one of said pressure pads deflects said moving surface towards said conveying surface, thereby reducing said opening.

39. The assembly as in Claim 38, wherein said moving belt is manufactured from a magnetic material and each of said pressure pads is comprised of a magnet.

40. The assembly as in Claim 38, wherein said pressure pads are manufactured from UHMW polyethylene.

41. The assembly as in Claim 38, wherein said belt is manufactured from a material selected from the group consisting of rubber, urethane, neoprene, fibreglass and Kevlar® or combinations thereof.

42. The assembly as in Claim 38, wherein said actuating assembly further comprises a plurality of pistons, one of each of said pistons for moving each of said pressure pads.

43. The assembly as in Claim 38, wherein said pistons are pneumatic pistons.

44. The assembly as in Claim 38, further comprising a controller operationally attached to said sensor for selectively providing compressed air to said pistons.